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Application No. 00 950 495.2-2103	Ref. JH/ml 020038ep	Date 03.04.2003
Applicant Halocarbon Products Corporation		

Communication pursuant to Article 96(2) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(2) and 83(2) and (4) EPC.

One set of amendments to the description, claims and drawings is to be filed within the said period on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



LORENZO VARELA M  
Primary Examiner  
for the Examining Division

Enclosure(s): 5 page/s reasons (Form 2906)



Beschaid/Pr tokoll (Anlage)

Communicati n/Minutes (Annex)

N tificati n/Pr cès-verbal (Annexe)

Datum  
Date 03.04.2003  
Date

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Sheet 1  
Feuille

Anmelde-Nr.:  
Application No.: 00 950 495.2  
Demande n°:

The examination is being carried out on the following application documents:

Text for the Contracting States:

AT BE CH LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

**Description, pages:**

1-13 as originally filed

**Claims, No.:**

1-12 as originally filed

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- D1: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; DIFELICE, JOHN J. ET AL: 'Thermal reactions of 2-chloro-1,1,1,2-tetrafluoroethane' retrieved from STN Database accession no. 126:117682 XP002220687 & COMBUSTION SCIENCE AND TECHNOLOGY (1996), 116-117(1-6), 5-30 ,
- D2: DATABASE CA [Online] CHEMICAL ABSTRACTS SERVICE, COLUMBUS, OHIO, US; SALMON, ROBERT P. ET AL: 'Experimental flow tube study on pyrolysis of 2-chloro-1,1,1-trifluoroethane' retrieved from STN Database accession no. 126:131133 XP002220688 & CHEMICAL AND PHYSICAL PROCESSES IN COMBUSTION (1996) 507-510 ,
- D3: US-A-2 627 529 (FEASLEY CHARLES F ET AL) 3 February 1953 (1953-02-03)
- D4: GB-A-1 039 468 (PECHINEY SAINT GOBAIN) 17 August 1966 (1966-08-17)
- D5: US-A-5 177 271 (ELSHEIKH MAHER Y ET AL) 5 January 1993 (1993-01-05)
- D6: WO 99 51553 A (MANOGUE WILLIAM H ;DU PONT (US); NAPPA MARIO JOSEPH (US); SIEVERT) 14 October 1999 (1999-10-14)
- D7: WO 98 33755 A (DU PONT ;NAPPA MARIO JOSEPH (US); RAO V N MALLIKARJUNA (US)) 6 August 1998 (1998-08-06)
- D8: GB-A-2 313 118 (ATOCHEM ELF SA) 19 November 1997 (1997-11-19)
- D9: EP-A-0 877 009 (DAIKIN IND LTD) 11 November 1998 (1998-11-11)
- D10: US-A-5 856 593 (POWELL RICHARD LLEWELLYN ET AL) 5 January



- 1999 (1999-01-05)
- D11: EP-A-0 402 652 (ATOCHEM NORTH AMERICA) 19 December 1990 (1990-12-19)
- D12: US-A-5 475 167 (NAPPA MARIO J ET AL) 12 December 1995 (1995-12-12)
- D13: US-A-5 523 497 (LUI NORBERT ET AL) 4 June 1996 (1996-06-04)
- D14: FR-A-2 690 687 (ATOCHEM NORTH AMERICA ELF) 5 November 1993 (1993-11-05)
- D15: US-A-4 613 709 (FRANKLIN JAMES) 23 September 1986 (1986-09-23)
- D16: US-A-4898645

1. The present application relates to a process for the preparation of aliphatic fluorocarbon products comprising breaking at least one bond in an aliphatic fluorocarbon starting compound and a recycling step. The pyrolysis of some aliphatic fluorocarbon compounds is disclosed as well.

### Novelty

2. The subject-matter of claims 1-4 and 6 is not novel in the sense of Article 54(1) and (2) EPC.
- 2.1. D1 discloses the pyrolysis of 2-chloro-1,1,1,2-tetrafluoroethane for the production of  $F_3C-CH:CF_2$ ,  $HFC:CF_2$  and  $HCIC:CF_2$  inter alia. This disclosure is novelty destroying for the subject-matter of claims 1-3 and 6, which is therefore not novel.
- 2.2. D2 discloses the pyrolysis of 2-chloro-1,1,1,2-tetrafluoroethane for the production of  $HFC:CF_2$ ,  $CFCI_2CF_3$  and  $CH_2FCF_3$  inter alia is disclosed. This disclosure is novelty destroying for the subject-matter of claims 1-4 and 6, which is therefore not novel.
- 2.3. D3-D5 disclose the pyrolysis of aliphatic fluorocarbons for the production of fluoroolefins. A recycling step is mentioned as well (see the passages mentioned in the search report). This disclosure is novelty destroying for the subject-matter of claims 1 and 2, which is therefore not novel.
- 2.4. D6, which is mentioned in the search report as a P-document, is regarded as state



of the art in the sense of Art. 54(3) EPC as the priority date of the related European application is prior to the one of the present application and the fees have been paid. The transformation of fluorinated aliphatic compounds into different aliphatic fluorocarbons by a process including breaking some bonds in the reactant and a recycling step according to claim 1 of the application is disclosed therein (see the passages mentioned in the search report). This disclosure is novelty destroying for the subject-matter of claim 1, which is therefore not novel.

2.5. D7-D11 disclose the transformation of fluorinated aliphatic compounds into different aliphatic fluorocarbons by a process including breaking some bonds in the reactant and a recycling step according to claim 1 of the application (see the passages mentioned in the search report). This disclosure is novelty destroying for the subject-matter of claim 1, which is therefore not novel.

2.6. D12-D16 disclose the pyrolysis of aliphatic fluorocarbons for the production of fluoroolefins. A recycling step is mentioned as well (see the passages mentioned in the search report). This disclosure is novelty destroying for the subject-matter of claims 1, 2 and 12, which is therefore not novel.

### Inventive step

3. The present application does not meet the requirements of Article 52(1) EPC, because the subject-matter of claims 5 and 7-12 does not involve an inventive step in the sense of Article 56 EPC.

3.1. The pyrolysis of fluorinated aliphatic compounds in order to obtain a) the corresponding product of elimination of HCl/HF; b) the corresponding products of isomerization; c) the corresponding products of rupture of the chain and d) the corresponding product of reaction of two starting products is known from the prior art (see D1-D5 and D12-D16; in particular D1 and D2).

3.2. In view of the above-mentioned prior art, the skilled person in the art would pyrolyse the starting fluorinated aliphatic compounds in claims 5 and 7-12 and would arrive to the products disclosed therein without the need of inventive skills. Therefore, an inventive step cannot be acknowledged.



### Further comments

4. If the applicant decides to proceed further with the present application and render the subject-matter of the claims novel and inventive by incorporating therein any technical feature not previously claimed, then in order to help the examiner to assess inventive step he is requested to show that this feature was non-obvious with respect to the desired objective and preferably is causative to an unexpected technical effect. Only in this case could such a feature contribute to an inventive step with respect to the state of the art according to Art. 56 EPC.
5. The relative terms "desired", "undesired" and "reactive" used in claim 1 as well as in the description have no well-recognised meaning and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of said claim unclear (Article 84 EPC).
6. Claim 1 is not supported by the description as required by Article 84 EPC; as its scope is broader than justified by the description. The reason therefor is that on step b) in claim 1 some of the aliphatic fluorocarbon products are said to be "optionally" obtained and therefore if this feature does not take place, steps c) and d) have no sense at all whilst on the description from page 2 onwards, the steps of separation and recycling of fluorinated aliphatic products are always reported.
7. Claims 3-12 have been drafted as separate independent claims, non dependent on claims 1 and 2. Under Article 84 in combination with Rule 29(2) EPC an application may contain more than one independent claim in a particular category only if the subject matter claimed falls within one or more of the exceptional situations set out in paragraphs (a), (b) or (c) of Rule 29(2) EPC. This is not the case in the present application; therefore, claims 3-12 should have been drafted as dependent on claims 1 and 2. Otherwise, a lack of unity will arise within the next official action.
8. The use of the word "about" in claims 3, 4, 6 and in the description, especially in connection with numerical ranges, is generally regarded as rendering the determination of the exact scope of the range difficult. When used in a claim, this results in lack of clarity, contrary to Art. 84 EPC. Therefore, claims 3, 4 and 6 as well as the description need to be adequately redrafted by deletion of said word in each



of its occurrences.

9. The units " used in the description on page 8 do not meet the requirements of Rule 35(12) EPC and should be replaced by the appropriate SI units (cf. the Guidelines, C-II, Annex 1). The present expressions should, however, be retained in parentheses after the replacement expressions.
10. The last statement in the description is vague and imprecise and implies that the subject-matter for which protection is sought may be different to that defined by the claims, thereby resulting in lack of clarity of the claims (Article 84 EPC) when used to interpret them (see the Guidelines, C-III, 4.3a). This statement should therefore be deleted to remove this inconsistency.
11. When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims.
12. In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.

If the applicant regards it as appropriate these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed.